

RESPONSE UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/817,591

REMARKS

Claims 1-32 are all the claims pending in the application. None of the claims are being amended.

Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-32 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Billheimer et al. (U.S. patent No. 6,611,825) in view of Goldstein et al. (hereinafter Goldstein 1) ("Summarizing Text Documents: Sentence Selection and Evaluation Metrics") and further in view of Goldstein et al. (hereinafter Goldstein 2) ("Multi-Document Summarization By Sentence Extraction"). Applicants traverse these rejections in view of the following arguments.

Claims 1-20

The present invention is directed to a system for generating a document summary. The document is being divided into sentences and the most relevant sentences are being selected for inclusion into the summary. Independent claims 1, 9 and 13 recite a feature of the invention, wherein the selected sentence is deleted from the document and the terms in the selected sentence are also eliminated from the document. This feature of the invention is not taught or suggested in the prior art of record. In the Office Action, the Examiner has admitted that neither Billheimer et al. nor Goldstein 1 teach the aforesaid feature. Thus, the Examiner added to the rejection another reference, Goldstein 2, alleging that Goldstein 2 teaches the identified feature at pages 44-45 and figures 1-3. Applicants carefully examined the cited portion of Goldstein 2, as well as the remainder of that reference, but could not find the alleged teaching.

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Specifically, in the aforesaid portion, Goldstein 2 states that the document summary created by the summarization algorithm MMR-MD with $\lambda=0.3$, shown in figure 3, has lower information redundancy compared with the summary created by MMR-MD summarization algorithm with $\lambda=1$, which is shown in figure 2, see Goldstein 2 at page 44. However, this improvement is achieved in Goldstein 2 not by deleting the selected sentence from the document and eliminating the terms in the selected sentence from the document, as claimed, but due to the use of the scoring formula shown in figure 1 of Goldstein 2. In fact, the summaries shown in both figure 2 and figure 3 are generated using the same algorithm, which neither deletes the selected sentence from the document nor eliminates the terms in the selected sentence from the document. In more detail, the score of the MMR-MD algorithm of Goldstein 2 consists of a similarity metric Sum1 and an anti-redundancy metric Sum2, which are combined with weights λ and $1-\lambda$, see figure 1. The value of the Sum2 anti-redundancy metric increases when a sentence is similar to the previous sentence. The smaller is the value of the weight λ , the greater weight in the result does the anti-redundancy metric Sum2 has. Redundant summary in figure 2 corresponds to $\lambda=1$, while the low-redundancy summary in figure 3 corresponds to $\lambda=0.3$. On the other hand, nowhere does Goldstein 2 mention the claimed deleting of the selected sentence from the document and eliminating of the terms in the selected sentence from the document.

In other words, the Examiner simply points to the result of the algorithm Goldstein 2 and claims that this result is somehow "equivalent" to the claimed specific step involving sentence and word deletion. Applicants respectfully submit that this is improper. The cited references must collectively teach or suggest each and every limitation of the claims. Here, none of the cited art teaches the aforesaid deleting the selected sentence from the document and eliminating

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the terms in the selected sentence from the document. Clearly, the claimed deleting the selected sentence from the document and eliminating the terms in the selected sentence from the document is not the same or equivalent to the use of the scoring formula with weight λ shown in figure 1 of Goldstein 2.

Moreover, even the results of the claimed deletion/elimination and the formula of figure 1 of Goldstein 2 are not the same. Specifically, Goldstein 2 punishes all sentences according to their similarity to previous selected sentences, see Goldstein 2, at page 43. Thus, both the redundant (identical) and similar sentences are affected in Goldstein 2. On the other hand, claims 1, 9 and 13 recite deletion of only the selected sentence itself, which has no effect on similar sentences. Thus, not only the algorithm of Goldstein 2 is different from the claimed invention, but even the results of the two are very different.

Thus, for all the foregoing reasons, independent claims 1, 9 and 13 are not unpatentable over Billheimer et al., Goldstein 1 and Goldstein 2.

In addition, with respect to claims 2, 10 and 13, Applicants respectfully submit that because Goldstein 2 does not delete the selected sentence from the document and does not eliminate the terms in the selected sentence from the document, it also does not recreate the weighed document term frequency in accordance with deleting and eliminating. Goldstein 2 always uses the formula shown in figure 1, without deleting any sentences or terms. The elimination of redundancy is accomplished by using the weight λ and the anti-redundancy matrix Sum2, without deletions being performed. Because there are no deletions, nothing needs to be recreated in Goldstein 2. Thus, claims 2, 10 and 13 are patentable for this additional reason as well.

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With respect to dependent claims 2-8, 10-12, and 14-20, while continuing to traverse the Examiner's characterization of the teachings of the references used by the Examiner in rejecting these claims, Applicant respectfully submits that these claims are patentable at least by definition, by virtue of their dependence upon the patentable independent claims 1, 9 and 13.

Claims 21-32

With respect to independent claims 21, 26 and 29, Applicants respectfully submit that none of the cited prior art, or any combination thereof, teach or suggest performing singular value decomposition on the terms-by-sentences matrix to generate a singular value matrix and a right singular vector matrix. Specifically, neither Billheimer et al. nor Goldstein 1 nor Goldstein 2 ever mention the claimed (1) singular value matrix and (2) right singular vector matrix. Applicants carefully reviewed the prior art of record but could not find the alleged teachings. Coincidentally, in the Office Action, the Examiner has forgotten to point to specific portions of the prior art, where the alleged teachings could be found. In this regard, Applicants respectfully remind the Examiner that Billheimer et al., Goldstein 1 and Goldstein 2 are the applied prior art and not the Examiner's analysis. When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. See *In re Rijckaert*, 28 U.S.P.Q.2d 1955,7 (Fed. Cir. 1993). Here, the examiner has clearly failed to do so. For this reason, claims 21, 26 and 29 are not unpatentable.

Moreover, the only mention of the SVD in Billheimer et al. is a very cursory reference in the background section of the specification. Neither Billheimer et al. nor Goldstein 1 nor Goldstein 2 teach or suggest using the SVD to generate a singular value matrix and a right

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singular vector matrix, as recited in the aforesaid claims 21, 26 and 29. This provides an additional reason for patentability of claims 21, 26 and 29.

With respect to dependent claims 22-25, 27, 28, and 30-32, while continuing to traverse the Examiner's characterization of the teachings of the references used by the Examiner in rejecting these claims, Applicant respectfully submits that these claims are patentable at least by definition, by virtue of their dependence upon the patentable independent claims 21, 26 and 29.

Conclusion

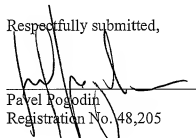
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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